

Remarks

This application has been reviewed in light of the Office Action of June 5, 2002. Claims 1-23 are pending, and all claims stand rejected. In response, claims 15 and 20 are amended, and the following remarks are submitted. Reconsideration of this application, as amended, is requested.

Claim 15 is objected to and has been amended responsively. Applicant asks that the Examiner reconsider and withdraw this ground of objection.

Claim 20 is rejected under 35 USC 112 and has been amended responsively. Applicant asks that the Examiner reconsider and withdraw this ground of rejection.

Claims 1, 3, 4, and 6 are rejected under 35 USC 102 as unpatentable over Cigna '959. Applicant traverses this ground of rejection.

The following principle of law applies to sec. 102 rejections. MPEP 2131 provides: "A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference. The identical invention must be shown in as complete detail as is contained in the ... claim. The elements must be arranged as required by the claim..." [citations omitted] This is in accord with the decisions of the courts. Anticipation under section 102 requires 'the presence in a single prior art disclosure of all elements of a claimed invention arranged as in that claim.' Carella v. Starlight Archery, 231 USPQ 644, 646 (Fed. Cir., 1986), quoting Panduit Corporation v. Dennison Manufacturing Corp., 227 USPQ 337, 350 (Fed. Cir., 1985)

Thus, identifying a single element of the claim which is not disclosed in the reference is sufficient to overcome a Sec. 102 rejection.

Claim 1 recites in part:

"a microelectronic integrated circuit array comprising an array of microelectronic integrated circuits

* * * * *

"a bump interconnect structure extending between each of the microelectronic integrated circuits and its respective supported element"

The explanation of the rejection (page 3, lines 4-6) recognizes that Cigna does not disclose this limitation and structure, but goes on to assert that "it is inherent that an interconnect array is constructed using microelectronic integrated circuit means." Applicant must respectfully disagree. The elements 22/24 and the elements 28 are all photodetectors (col. 3, lines 57-64). Because there are photodetectors on both sides of the bump structure, the bump structure shown in Cigna cannot extend between "each of the microelectronic integrated circuits and its respective supported element."

It is argued that the presence of the "interconnect support network 58" (col. 5, lines 54-55) necessarily suggests "a microelectronic integrated circuit array". No, element 58 is just what it says--a support. The explanation of the rejection alters Cigna's description of his element 58 to be "interconnect array". Applicant requests that the correct terminology be used, because there is no indication that element 58 is an "array". The only clue to the nature of the "interconnect support network 58" is found at col. 5, lines 30-32, which indicate that another element of Cigna with the same name, the "interconnection network support 20", is made of "silicon, alumina, or any other material appropriate for this type of substrate". There is no suggestion that element 20 or element 58 is "a microelectronic integrated circuit array". It is a "substrate". Nor is the element 58/20 an "array"--it is a piece of material. And there is every indication that element 58/20 is simply an inert support without including a microelectronic integrated circuit array.

MPEP 2112-2113 sets forth the law on inherency. Inherency is not to be taken lightly and not to be asserted unless there is good evidence to suggest that the asserted property or characteristic is necessarily present in the teachings of the prior art reference. The concept of inherency is not provided as a way to fill in the gaps in

missing disclosure or teachings based upon speculation, unless the asserted property or characteristic may be shown to be necessarily present by objective evidence. Instead, "inherency" is used when every aspect of the disclosure of a reference and the claimed subject matter are otherwise exactly the same, then it may be inferred that some property or characteristic further recited in the claim must necessarily be present in the art reference. MPEP 2112 provides "The fact that a certain result or characteristic may occur or be present in the prior art is not sufficient to establish the inherency of that result or characteristic. In re Rijckaert, 9 F.3d 1531, 1534, 28 USPQ2d 1955, 1957 (Fed. Cir. 1993); In re Oelrich, 666 F.2d 578, 581-82, 212 USPQ 323, 326 (CCPA 1981). "To establish inherency, the extrinsic evidence 'must make clear that the missing descriptive matter is necessarily present in the thing described in the reference, and that it would be so recognized by persons of ordinary skill. Inherency, however, may not be established by probabilities or possibilities. The mere fact that a certain thing may result from a given set of circumstances is not sufficient.'" In re Robertson, 169 F.3d 743, 745, 49 USPQ2d 1949, 1950-51 (Fed. Cir. 1999) (citations omitted) "In relying upon the theory of inherency, the examiner must provide a basis in fact and/or technical reasoning to reasonably support the determination that the allegedly inherent characteristic necessarily flows from the teachings of the applied prior art." Ex parte Levy, 17 USPQ2d 1461, 1464 (Bd. Pat. App. & Inter. 1990)"

As explained above, not only is the claimed "a microelectronic integrated circuit array" not inherently present, but it cannot be present in the type of device disclosed by Cigna. In the discussion of claim 4, it is suggested that because the concept of "hybridization" is used in Cigna,

Claim 1 further recites in part:

"there being at least one supported element for each of the microelectronic integrated circuits"

This limitation cannot even be assessed in relation to Cigna, because there is no indication of what might constitute the an array of microelectronic integrated circuits

in Cigna.

Claim 3 depends from claim 1 and is therefore allowable because Cigna does not disclose the limitations of claim 1. Further, claim 3 recites in part:

"each microelectronic integrated circuit comprises an electrical interface circuit"

Again, inherency is relied upon to argue that the interconnection network support necessarily serves as a readout device. Again, there is no reason to believe that, and every reason to believe that element 58 is what Cigna describes--a substrate.

Claim 4 depends from claim 3 and from claim 1 and is therefore allowable because Cigna does not disclose the limitations of claims 1 and 3. Further, claim 4 recites in part:

"the electrical interface circuit is a readout integrated circuit"

Again, inherency is relied upon to argue that the interconnection network support necessarily serves as a readout integrated circuit. Again, there is no reason to believe that, and every reason to believe that element 58 is what Cigna describes--a substrate.

Applicant asks that the Examiner reconsider and withdraw this ground of rejection.

Claims 2, 5, 8-9, 12, and 16-17 are rejected under 35 USC 103 as unpatentable over Cigna. Applicant traverses this ground of rejection.

The following principle of law applies to all sec. 103 rejections. MPEP 2143.03 provides "To establish prima facie obviousness of a claimed invention, all claim limitations must be taught or suggested by the prior art. In re Royka, 490 F.2d 981, 180 USPQ 580 (CCPA 1974). All words in a claim must be considered in judging the patentability of that claim against the prior art. In re Wilson, 424 F.2d 1382, 1385, 165

USPQ 494, 496 (CCPA 1970)." [emphasis added] That is, to have any expectation of rejecting the claims over a single reference or a combination of references, each limitation must be taught somewhere in the applied prior art. If limitations are not found in any of the applied prior art, the rejection cannot stand. In this case, the applied prior art references clearly do not arguably teach some limitations of the claims.

Inherency is again relied upon in this rejection. Applicant traverses the assertion of inherency for the reasons stated earlier, and incorporates the discussion of the legal issue of inherency from above.

Claim 2 depends from claim 1 and incorporates its limitations. The limitations of claim 1 are not taught by Cigna for the reasons stated earlier, and which are incorporated here. Claim 2 further recites in part:

"wherein the first region comprises a first semiconductor region and the second region comprises a second semiconductor region"

The nature of the supported regions is recited in claim 1: "each of the supported elements comprising a first region and a second region". So the two semiconductor regions must be on the supported element. So to find this limitation in the teachings of Cigna, the two semiconductor regions must be on one of the supported elements.

The explanation of the rejection takes the position that Cigna does not teach this limitation, see page 4, lines 11-13 of the Specification. It then goes on to rely on "common knowledge" as to the construction. "Common knowledge" is not a class of statutory prior art recognized in 35 USC 102 or 35 USC 103. Applicant traverses this substitution of asserted "common knowledge" prior art for a statutory prior art reference as applied in the context of the claim. Here, the matters asserted to be "common knowledge" are not, in this context of two regions on the same supported element, and certainly that is not what Cigna shows or discloses. Applicant requests that, if the rejection is maintained, the Examiner apply a statutory prior art reference. MPEP 2144.03. Absent such an application of statutory prior art, Applicant requests that the rejection be withdrawn.

Claim 8 has many of the same recitations as claim 1, and has a similar recitation regarding the two semiconductor regions. The prior discussion of these limitations in respect to claims 1 and 2 is incorporate here. Accordingly, claim 8 is not taught by Cigna for the reasons discussed earlier, and which are incorporated here.

Claim 5 depends from claim 3 and claim 1 and incorporates their limitations. The limitations of claims 1 and 3 are not taught by Cigna for the reasons stated earlier, and which are incorporated here. Additionally, claim 5 recites in part:

“the electrical interface circuit is a driver integrated circuit, and the input/output element is an emitter.”

Cigna has no such teaching. There is no mention of “driver integrated circuit” in Cigna, and the explanation of the rejection (page 4, last two lines on page) readily agrees that Cigna does not teach that the input/output element is an emitter. As noted above, the MPEP requires that the prior art teach each claim limitation, and that is not done here.

Claim 9 depends from claim 8, whose limitations are not taught by Cigna for the reasons stated earlier, which are incorporated here. Additionally, claim 9 recites in part:

“the first semiconductor region of each of the detector islands is an n-doped semiconductor, and the second semiconductor region of each of the detector islands is a p-doped semiconductor”

There is no teaching of this limitation in the reference, and the explanation of the rejection does not assert there is any such teaching.

Claim 16 contains many of the same recitations as claim 1, and has a similar recitation regarding the two semiconductor regions as recited in claim 2. The prior discussion of these limitations in respect to claims 1 and 2 is incorporate here. Accordingly, claim 16 is not taught by Cigna for the reasons discussed earlier, and

which are incorporated here.

Applicant asks that the Examiner reconsider and withdraw this ground of rejection.

Claim 10 is rejected under 35 USC 103 over Cigna in view of Izumi. Applicant traverses this ground of rejection.

Claim 10 depends from claim 8 and incorporates its limitations. The prior discussion of these limitations in respect to claim 8 is incorporate here. Accordingly, claim 10 is not taught by Cigna for the reasons discussed earlier, and which are incorporated here. Izumi adds nothing in this regard.

The present rejection is an attempt at hindsight reconstruction based upon unrelated references, which is technically unsupported and is legally improper. The case authority and the MPEP provide guidance on this point. The present rejection is a sec. 103 combination rejection. It is well established that a proper sec. 103 combination rejection requires more than just finding in the references the elements recited in the claim (but which was not done here). To reach a proper teaching of an article or process through a combination of references, there must be stated an objective motivation to combine the teachings of the references, not a hindsight rationalization in light of the disclosure of the specification being examined. MPEP 2143 and 2143.01. See also, for example, In re Fine, 5 USPQ2d 1596, 1598 (at headnote 1) (Fed.Cir. 1988), In re Laskowski, 10 USPQ2d 1397, 1398 (Fed.Cir. 1989), W.L. Gore & Associates v. Garlock, Inc., 220 USPQ 303, 311-313 (Fed. Cir., 1983), and Ex parte Levengood, 28 USPQ2d 1300 (Board of Appeals and Interferences, 1993); Ex parte Chicago Rawhide Manufacturing Co., 223 USPQ 351 (Board of Appeals 1984). As stated in In re Fine at 5 USPQ2d 1598:

"The PTO has the burden under section 103 to establish a prima facie case of obviousness. [citation omitted] It can satisfy this burden only by showing some objective teaching in the prior art or that knowledge generally available to one of ordinary skill in the art would lead that

individual to combine the relevant teachings of the references."

And, at 5 USPQ2d 1600:

"One cannot use hindsight reconstruction to pick and choose among isolated disclosures in the prior art to deprecate the claimed invention."

Following this authority, the MPEP states that the examiner must provide such an objective basis for combining the teachings of the applied prior art. In constructing such rejections, MPEP 2143.01 provides specific instructions as to what must be shown in order to extract specific teachings from the individual references:

"Obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention when there is some teaching, suggestion, or motivation to do so found either in the references themselves or in the knowledge generally available to one of ordinary skill in the art. In re Fine, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988); In re Jones, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992)."

* * * * *

"The mere fact that references can be combined or modified does not render the resultant combination obvious unless the prior art also suggests the desirability of the combination." In re Mills, 916 F.2d 680, 16 USPQ2d 1430 (Fed. Cir. 1990)."

* * * * *

"A statement that modifications of the prior art to meet the claimed invention would have been 'well within the ordinary skill of the art at the time the claimed invention was made' because the references relied upon teach that all aspects of the claimed invention were individually known in the art is not sufficient to establish a prima facie

case of obviousness without some objective reason to combine the teachings of the references. Ex parte Levengood, 28 USPQ2d 1300 (Bd.Pat.App.& Inter. 1993)."

Here, there is set forth no objective basis for combining the teachings of the references in the manner used by this rejection, and selecting the helpful portions from each reference while ignoring the unhelpful portions. An objective basis is one set forth in the art or which can be established by a declaration, not one that can be developed in light of the present disclosure. If the rejection is maintained, Applicant asks that the Examiner set forth the objective basis found in the references themselves for combining the teachings of the references.

Applicant asks that the Examiner reconsider and withdraw this ground of rejection.

Claims 7, 11, 13-15, and 18-23 are rejected under 35 USC 103 over Cigna in view of Dodd. Applicant traverses this ground of rejection.

Regarding claim 15, it is agreed that Dodd mentions the use of MCT technology. However, this mention is by way of discussing the technology that is unacceptable (col. 1, lines 18-20), in the Background and in preparation for a discussion of Dodd's invention. Thus, Dodd teaches away from using MCT technology. The rejection may not properly be based on a reference which teaches away from the present invention as recited in the claims.

"A reference may be said to teach away when a person of ordinary skill, upon reading the reference, would be discouraged from following the path set out in the reference, or would be led in a direction divergent from the path that was taken by the applicant. In re Spinnoble, 160 USPQ 237 244 (CCPA 1969)...As "a useful general rule,"..."a reference that 'teaches away' can not create a prima facie case of obviousness." In re Gurley, 31 USPQ2d 1130, 1132 (Fed. Cir. 1994)"

One certainly cannot say that Dodd teaches the use of MCT technology.

The explanation of the rejection relies on “common knowledge” and “well known”. “Well known” and “commonly known” are not classes of statutory prior art recognized in 35 USC 102 or 35 USC 103. Applicant traverses this substitution of asserted “well known” prior art for a statutory prior art reference as applied in the context of the claim. Here, the matters asserted to be “well known” are not, in this context. Applicant requests that, if the rejection is maintained, the Examiner apply a statutory prior art reference. MPEP 2144.03. Absent such an application of statutory prior art, Applicant requests that the rejection be withdrawn.

Claim 18 contains many of the same recitations as claim 1, and has a similar recitation regarding the two semiconductor regions as recited in claim 2. The prior discussion of these limitations in respect to claims 1 and 2 is incorporate here. Accordingly, claim 18 is not taught by Cigna for the reasons discussed earlier, and which are incorporated here.

Additionally, claim 18 is a method claim. Neither reference teaches a fabrication method remotely like that recited in claim 18. The explanation of the rejection does not address the method steps in any way, and therefore Applicant does not know what portions of the references may be relied upon for the method teachings. If the rejection of the method claims 18-23 is maintained, Applicant asks that the method steps be addressed and related to the teachings of the references, so that Applicant may understand what portions of the references are relied upon.

Claim 19 depends from claim 18 and incorporates its limitations. Applicant incorporates the prior discussion of claim 18. Claim 19 is therefore not taught by the references.

Claim 20 depends from claim 18 and incorporates its limitations. Applicant incorporates the prior discussion of claim 18. Claim 20 is therefore not taught by the references. Claim 20 additionally recites in part:

“forming a trench through the first semiconductor region and through the semiconductor region and into the detector substrate.”

Neither reference has any such teaching, and the explanation of the rejection does not even seek to point to any such teaching in references.

Claim 21 depends from claim 18 and incorporates its limitations. Applicant incorporates the prior discussion of claim 18. Claim 21 is therefore not taught by the references. Claim 21 additionally recites in part:

“removing the detector substrate.”

Neither reference has any such teaching, and the explanation of the rejection does not even seek to point to any such teaching in references.

Claims 7, 13, and 22 all depend from their respective parent claims, and incorporate their limitations. The prior discussion of these limitations in respect to the respective parent claims is incorporate here. Accordingly, these dependent claims are not taught by Cigna for the reasons discussed earlier, and which are incorporated here. Dodd adds nothing in this regard.

Claim 7 recites in part, and claims 13 and 22 have similar limitations:

“wherein the hybrid microelectronic array structure is curved.”

Neither reference has any such teaching. The reference in Dodd to curved structure relates to the MQW elements being curved, not the entire array structure being curved. An example of an MQW element is element 320 of Figure 8 or element 190A of Figure 5, neither of which is a “hybrid microelectronic array structure” as recited in claim 7, a “readout integrated circuit array and the detector array” as recited in claim 13, or a “hybrid microelectronic array structure” as recited in claim 22. And certainly there is no teaching of any “deforming” step as recited in claim 22.

Claims 11 and 23 depend from their respective parent claims, and incorporate their limitations. The prior discussion of these limitations in respect to the respective parent claims is incorporate here. Accordingly, these dependent claims are not taught

by Cigna for the reasons discussed earlier, and which are incorporated here. Dodd adds nothing in this regard.

Additionally, claim 11 recites in part, and claim 23 has a similar limitation:

"an electrical conductor interconnecting all of the first detector
interconnect locations"

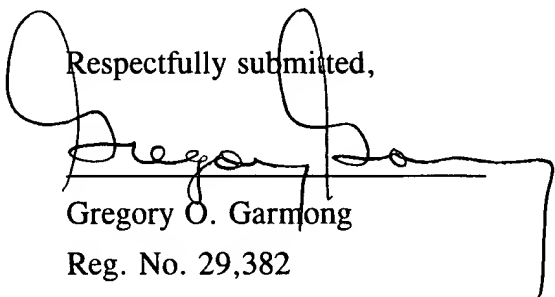
The explanation of the rejection does not attempt to suggest that this limitation is found in the references, or to point out its location in the references. Applicant therefore does not know the factual basis for the assertion that these references are pertinent to this limitation. If the rejection is maintained, Applicant asks that the Examiner point out exactly where in the references this limitation is said to be found.

Applicant incorporates the prior discussion of the need for an objective basis for combining the teachings of the references, and the request for the basis in the references for the objective basis.

Applicant asks that the Examiner reconsider and withdraw this ground of rejection.

This paper is filed by the undersigned, who is not presently an attorney of record, pursuant to 37 CFR 1.34(a), MPEP 405, at the instruction of the attorney of record.

Respectfully submitted,



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VERSION WITH MARKINGS TO SHOW CHANGES MADE

underlined material is to be inserted, [bracketed] material is to be deleted, and --material set off by dashes-- is to be added.

Claims:

15. (Amended) The hybrid microelectronic array structure of claim 8, wherein the detector array type [is selected] is selected from the group consisting of mercury-cadmium-telluride, indium antimonide, quantum well infrared photodetector, and extrinsic impurity band conductor material.

20. (Amended) The method of claim 18, wherein the step of defining detector islands includes the step of

forming a trench through the first semiconductor region and through the second semiconductor region and into the detector substrate.